

Please delete the Summary of the Invention and substitute the following Summary of the Invention thereof:

### **SUMMARY OF THE INVENTION**

The need in the art is addressed by the teachings of the present invention. A method and apparatus of monitoring the performance of a product that has user serviceable components is taught. In the illustrative embodiment, the inventive method includes the steps of performing an initial calibration procedure to produce a first performance metric and performing a subsequent calibration procedure to produce a second performance metric. The second performance metric is compared with the first performance metric and a factor is output indicative of a change in performance resulting from a change in the user serviceable components. The inventive method enables a change in user serviceable components between two calibrations to be detected and monitored.

In a refinement of the illustrative implementation, a step of sending a notification that the performance factor has crossed a predetermined threshold is employed. Numerous additional refinements are disclosed including, by way of example, the steps of disabling the product if the performance factor has crossed a predetermined threshold, performing the initial calibration procedure prior to the time a user serviceable component is replaced, performing the initial calibration procedure at the time of manufacture of the product, performing the subsequent calibration procedure when one of the user serviceable components is replaced, communicating the performance factor to a service provider and communicating the performance factor via the Internet.

The present invention also teaches a method of identifying invalid service claims for a product having user serviceable components. In an illustrative embodiment, the method comprises the steps of performing an initial calibration procedure to produce a

first performance metric, and performing a subsequent calibration procedure to produce a second performance metric. The second metric is compared with the first metric and a factor is output indicative of a reduction in performance resulting from a change in the user serviceable components with a third party user serviceable component. Finally, the validity of a subsequent service claim is determined according to the performance factor.

In a refinement of this method, the step of establishing the cost of providing service for the product according to the determined validity of the service claim is added.

The present invention also provides a method of identifying invalid service claims for a product, in the case where some of the originally installed user serviceable components include an electronic label.

The present invention also teaches an apparatus having user serviceable components and the capability to monitor its own performance. In the illustrative embodiment, the apparatus is adapted to perform an initial calibration procedure to produce a first performance metric and a subsequent calibration procedure to produce a second performance metric. The apparatus is also adapted to compare the second metric with the first metric and output a factor indicative of a change in performance resulting from a change in the user serviceable components.

In more specific embodiments, the apparatus is adapted to provide a notification when the performance factor has crossed a predetermined threshold and a mechanism is included for disabling the apparatus if the performance factor has crossed a predetermined threshold. In alternative embodiments, the mechanism for performing an initial calibration procedure operates at the time of manufacture of the apparatus and a mechanism is included for performing the subsequent calibration procedure when one of the user serviceable components is replaced. In a further refinement, the apparatus has a mechanism for communicating the performance factor to a service provider.

Marked up version of the Summary of the Invention as per 37 CFR 1.125:

The need in the art is addressed by the ~~methods and apparatuses taught by~~ teachings of the present invention. A method and apparatus of monitoring the performance of a product that has user serviceable components is taught. ~~This~~ In the illustrative embodiment, the inventive method includes the steps of performing an initial calibration procedure to produce a first performance ~~metric, and then~~ metric and performing a subsequent calibration procedure to produce a second performance metric. Then, ~~comparing the second performance metric~~ is compared with the first performance ~~metric, and outputting a performance factor~~ metric and a factor is output indicative of a change in performance resulting from a change in the user serviceable components. The ~~If inventive method enables~~ a change is in user serviceable components ~~occurred between the two calibrations, it can thus~~ between two calibrations to be detected and monitored.

In a refinement of ~~this method, a further~~ the illustrative implementation, a step of sending a notification that the performance factor has crossed a predetermined threshold is employed. ~~In a further refinement, the step~~ Numerous additional refinements are disclosed including, by way of example, the steps of disabling the product if the performance factor has a crossed a predetermined ~~threshold is added.~~ In a further refinement, threshold, performing the initial calibration procedure ~~is performed~~ prior to the time a user serviceable component is ~~replaced.~~ replaced, performing the initial calibration procedure ~~is performed~~ at the time of manufacture of the ~~product.~~ In a further refinement, product, performing the subsequent calibration procedure ~~is performed~~ when one of the user serviceable components is ~~replaced.~~ In a further refinement, the step of replaced, communicating the performance factor to a service provider ~~is added.~~ In a further refinement, the and communicating step ~~is accomplished the performance factor~~ via the Internet.

The present invention also teaches a method of monitoring the performance of an product, where some of the originally installed user serviceable components include an

~~electronic label. This method includes the steps of performing initial calibration procedure to produce a first performance metric, and detecting the presence of a third party user serviceable component by identifying the absence of a proper electronic label. Then, performing a subsequent calibration procedure to produce a second performance metric, and comparing the second performance metric with the first performance metric. Finally, outputting a performance factor indicative of a change in performance resulting from the use of the third party user serviceable component.~~

~~The present invention also teaches a method of identifying the presence of third party replacement consumables in an product, where some of the originally installed user serviceable components include an electronic label. This method includes the steps of reading first information indicative of an amount of consumption of a consumable from the electronic label of one of the certain originally installed user serviceable components, and storing the first information. Then, subsequently repeating the reading step to produce second information indicative of an amount for consumption, and comparing the second information with the first information thereby identifying an increase in the amount of the consumable. Next, outputting a replacement indicator indicative of an increase in the quantity of the consumable.~~

The present invention also teaches a method of identifying invalid service claims for an product having user serviceable components. This In an illustrative embodiment, the method comprises the steps of performing an initial calibration procedure to produce a first performance metric, and performing a subsequent calibration procedure to produce a second performance metric. then, comparing the second performance metric The second metric is compared with the first performance metric, and outputting a performance factor metric and a factor is output indicative of a reduction in performance resulting from a change in the user serviceable components with a third party user serviceable component. Finally, determining the validity of a subsequent service claim is determined according to the performance factor. In a refinement of this method, the step of establishing the cost of providing service for the product according to the determined validity of the service claim is added.

~~The present method also teaches~~ invention also provides a method of identifying invalid service claims for an product, in the case where some of the originally installed user serviceable components include an electronic label. ~~This method includes the steps of performing initial calibration procedure to produce a first performance metric, and detecting the presence of a third party user serviceable component by identifying the absence of a proper electronic label. Then, performing a subsequent calibration procedure to produce a second performance metric, and comparing the second performance metric with the first performance metric. Next, outputting a performance factor indicative of a change in performance resulting from the use of the third party user serviceable component, and determining the validity of a subsequent service claim according to the performance factor. In a refinement of this method, the step of establishing the cost of providing service for the product according to the determined validity of the service claim is added.~~

The present invention also teaches a ~~product~~ an apparatus having user serviceable components ~~that is enabled and the capability~~ to monitor its own performance. ~~The product has a means for performing~~ In the illustrative embodiment, the apparatus is adapted to perform an initial calibration procedure to produce a first performance metric, ~~and a means for performing~~ metric and a subsequent calibration procedure to produce a second performance metric. ~~The product also has a means for comparing the second performance~~ apparatus is also adapted to compare the second metric with the first performance metric, ~~and a means for outputting a performance~~ metric and output a factor indicative of a change in performance resulting from a change in the user serviceable components. ~~In a refinement of this product, the means for outputting further provides~~

In more specific embodiments, the apparatus in adapted to provide a notification when the performance factor has crossed a predetermined ~~threshold. In a further refinement of this product also has a means~~ threshold and a mechanism is included for disabling the ~~product~~ apparatus if the performance factor has a crossed a predetermined threshold. ~~In a further refinement, the means~~ alternative embodiments, the mechanism for performing an initial calibration procedure operates at the time of manufacture of the product. ~~In a further refinement, the means~~ apparatus and a mechanism is included for

performing the subsequent calibration procedure when one of the user serviceable components is replaced. In a further refinement, the ~~product further has a means~~ apparatus has a mechanism for communicating the performance factor to a service provider. In a further refinement, the ~~means for communicating interfaces to the Internet.~~ In a further refinement, the product is a printer.

~~— The present invention also teaches a product that has user serviceable components, some of which include electronic labels, where the product is capable of monitoring its own performance. The product includes a means for performing initial calibration procedure to produce a first performance metric, and a means for detecting the presence of a third party user serviceable component by identifying the absence of a proper electronic label. It also includes a means for performing a subsequent calibration procedure to produce a second performance metric, and a means for comparing the second performance metric with the first performance metric. In addition, a means for outputting a performance factor indicative of a change in performance resulting from the use of the third party user serviceable component.~~

~~The present invention also teaches a product that has user serviceable components, some of which have electronic labels, and that has consumables in the user serviceable components. The product includes a means for reading first information indicative of an amount of consumption of a consumable from the electronic label of one of certain originally installed user serviceable components, and a memory for storing the first information. Also, a means for subsequently reading second information indicative of an amount for consumption of the consumable from the electronic label, and a means for comparing the second information with the first information thereby identifying an increase in the amount of the consumable. And, a means for outputting a replacement factor indicative of an increase in the quantity of the consumable.~~

Please replace the paragraph beginning on page 10, line 21 with the following rewritten paragraph:

One technique employed according to the present invention for assessing the ongoing quality of performance of a product involves one or more calibrations. In the laser printer illustrative embodiment, a calibration process is run at the time of manufacture to establish certain criteria respecting the performance of the product. These criteria are called metrics. This same calibration procedure can be run after a user serviceable component is replaced. The initial calibration serves as a point of reference for the second calibration, or re-calibration. The calibration is accomplished by printing a test image to the image drum, and then employing a sensor to accomplish an analysis of the image as it resides on the image drum. Quality factors include, but are not limited to, the lightness/darkness and thickness of lines, uniformity of the image, banding, and so forth. The controller then accomplishes the calibration and attempts to adjust the laser to make the image consistent with the original, baseline[[,]] calibration. Assuming it can calibrate to the ~~base-line~~ baseline, then the replaced components meet a minimum quality threshold and are good enough. This approach is also used along with other sensors and software routines to test the quality of parts to determine whether they meet a minimum standard. If so, the system continues to function. If not, then the product may flag the components as unacceptable; and communicate the deficiency to the end user, the service provider or other entity.